

THE GENUS *NESOLYCAENA* WATERHOUSE AND TURNER (LEPIDOPTERA: LYCAENIDAE) WITH A DESCRIPTION OF A NEW SPECIES

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Abstract

The genus *Adaluma* Tindale is proposed as a junior synonym of *Nesolycaena* on the basis of similarities in adult morphology, immature stages and larval food plant. Three species are included: *N. albosericea* (Miskin), *N. urumelia* (Tindale), comb. nov., and *N. caesia* sp. nov., from Western Australia is described and illustrated.

Introduction

Waterhouse and Turner (1905) erected the genus *Nesolycaena* to accommodate the lycaenid species *Holochila albosericea* Miskin. Tindale (1922), in his description of the genus *Adaluma*, noted the shortness of the antennae as a feature shared with *Nesolycaena* and stated that the two were otherwise distinct without, however, specifying the nature of these differences. Tite (1963) distinguished *Adaluma* from *Candalides* Hübner but did not include *Nesolycaena* in his revision of this genus. This revision does not seem to have found favour with subsequent authors. Sands (1971) and Edwards (1980) described and figured in detail the larvae and pupae of *N. albosericea* and *A. urumelia* respectively, and pointed out the strong similarities between them and their close relationship to *Candalides*, from which, however, they possess discrete differences. A fragmentary pupal exuviae of *N. caesia* conforms closely to the description of the pupa of *A. urumelia* given by Edwards (1980). Sands (1971) in addition, noted similarities in venation and in the male genitalia. Both these authors as well as Common and Waterhouse (1981) referred to the possible synonymy of *Adaluma* and *Nesolycaena*.

The three species dealt with here form a compact group closely allied to *Candalides* and characterised by antennae less than half the length of the costa, prominent juxta in the male genitalia, separation of veins Sc and R₁, strong similarities in the life history and early stages and a common generic larval food plant (*Boronia* Sm.).

Genus *Nesolycaena* Waterhouse and Turner

Nesolycaena Waterhouse and Turner 1905: 801. Type species: *Holochila albosericea* Miskin.

Adaluma Tindale 1922: 537. Type species: *A. urumelia* Tindale, syn. nov.

Nesolycaena caesia sp. nov. (Figs. 1-4, 9, 11, 13).

Types. WESTERN AUSTRALIA: *Holotype* ♂, Kalumburu, 3.vi.1990, C.G. Miller, genitalia slide 3393, Reg. no. 3328, in Australian National Insect Collection (ANIC), Canberra.

Paratypes: 1♀, same data as holotype, genitalia slide 3394 (ANIC); 1♂, 1♀, same data as holotype but dated 10.v.1991, in Queensland Museum, Brisbane; 1♂, 1♀, same data, in Western Australian Museum, Perth; 30♂♂, 27♀♀, same data but dated 1.vi.1990, 3.vi.1990, 10 and 11.v.1991, 13, 14 and 15.v.1991, in C.G. Miller collection, Lismore; 24♂♂, 20♀♀, Kalumburu, 10-15.v.1991, J.W.C. d'Apice, in J.W.C. d'Apice collection, Sydney; 1♂, 1♀, same data, in H. Bollam collection, Perth; 6♂♂, 3♀♀, 2.5 km NE Kalumburu, 1-3.iv.1991, S.J. Johnson; 1♂, 1♀, same data but dated 4.iv.1991, 3♂♂, 1♀, Pimm Hill, 16 km NW Kalumburu, 4.iv.1991, S.J. Johnson, all in S.J. Johnson collection, Townsville.

Male (Figs. 1, 2).

Head black with some white scales; eyes smooth, orange; frons white; antennae: length (holotype) 7 mm; black ringed with white; club black, unscaled, tip brown; labial palpi above black, beneath with terminal segment black, first and second segments thickly covered with white scales. *Thorax*: above black, thinly covered with bluish white scales. *Abdomen* above black with thin covering of white scales, beneath white. *Fore wing* above: length (holotype) 16 mm; costa strongly bowed, apex and termen rounded; silky white with blue tinge; veins M_2 to CuA_1 with faint coating of black scales in median area; apex black extending narrowly along costa for one third of its length and along half the length of the termen; veins with black scales towards termen; narrow black terminal line; cilia grey with white tips. *Hind wing* above silky white with blue tinge; veins with black scales towards termen; narrow black terminal line. Cilia as in fore wing; subterminal spots below show through faintly. *Fore wing* below pale greyish white; two round black spots on either side of vein CuA_1 towards termen; narrow black terminal line; cilia white with grey tips. *Hind wing* below pale greyish white; subterminal row of six rounded black spots; cilia as in fore wing.

Genitalia (Figs. 9, 11): uncus short and strongly curved, hairy; gnathos long and U-shaped, without hairs; valvae short and robust with bifurcated tips, hairy; aedeagus strongly curved beneath, pointed at tip and with isolated hairs; juxta very large and broad.

Female (Figs. 3, 4).

Head, thorax and abdomen as in male. *Fore wing* length (figured paratype) 17 mm; greyish white without blue tinge; black apical area more extensive than in male, extending broadly along half the length of costa. *Hind wing* greyish white without blue tinge; veins with terminal black scales extending more basally than in male; subterminal spots beneath show through more prominently; terminal line and cilia as in male. *Fore wing* below pale brown with paler central area; subterminal spots as in male and surrounded by area of paler brown.



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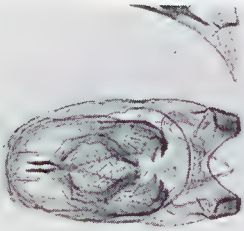


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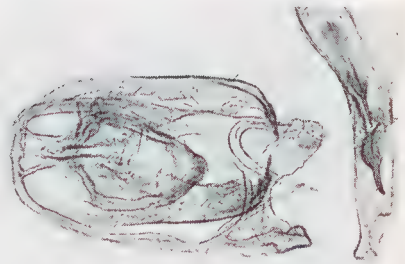


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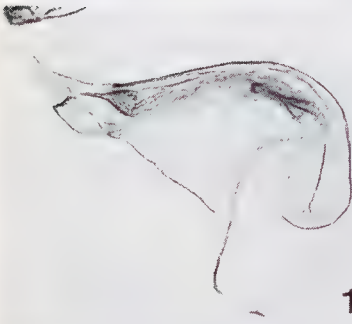
Figs. 1-8. *Nesolycaena* spp. (1-4) *N. caesia* sp. n. (1), ♂ upperside, (2), ♂ underside, (3), ♀ upperside, (4), ♀ underside. (5-8) *N. urumelia* (Miskin). (5), ♂ upperside, (6), ♂ underside, (7), ♀ upperside, (8), ♀ underside.



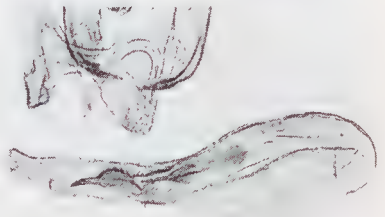
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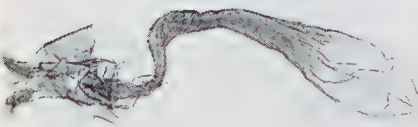
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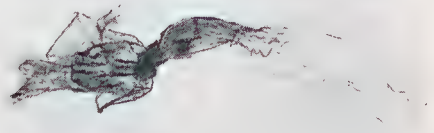
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Figs. 9-14. *Nesolycaena* spp. (9,10) ♂ genitalia: (9), *N. caesia*; (10), *N. urumelia*; (11,12) aedeagus: (11), *N. caesia*; (12), *N. urumelia*; (13,14) ♀ genitalia: (13), *N. caesia*; (14), *N. urumelia*.

Genitalia (Fig. 13). Corpus bursae simple, elongate; ductus bursae long, narrow and sclerotised; apophysis posterior short and narrow; papillae anales with dense tufts of hairs.

Variation.

The median dusting of black scales on veins M_2 , M_3 and CuA_1 in the male may be found on only one or two veins or is entirely absent in many specimens. The black apical area is slightly variable in extent. On the forewing below there may be up to four additional small black spots between M_1 and CuA_2 outside the two large spots on either side of CuA_1 . The hind wing in some females is darker than the figured specimen (Fig. 3) and may approach that of *N. urumelia* (Fig. 7). Fore wing length in male 14.8-16.8 mm ($n=52$), in female 14.7-18.1 ($n=45$).

Distribution. The species is known from three localities near Kalumburu, in the eastern Kimberley region of Western Australia, 280 km NW of Kununurra.

Etymology. The specific name is the Latin adjective *caesia* (light grey, bluish grey) and refers to the ♂ wing color of the species.

Discussion

Male *N. caesia* may be distinguished from *N. urumelia* by its greatly reduced sex mark on the veins in the median area of the fore wing above. The apex of the fore wing of male *N. urumelia* (Fig. 5) is greyish black above, frequently with a terminal band of faintly defined spots. In *N. caesia* the apex is black and slightly more extensive without terminal spots. Male *N. urumelia* from Groote Eylandt and Arnhem Land are tinged green above, whereas specimens from near Darwin are similar in colour to *N. caesia*. Females of the two species are difficult to distinguish (Figs. 3, 7), but those of *N. caesia* tend to be paler. The male genitalia of *N. urumelia* (Figs. 10, 12) are identical in specimens from all localities. The valva in *N. caesia* is short and thick whereas in *N. urumelia* it is long and slender.

The butterflies fly close to the ground around *Boronia filicifolia* A. Cunn. ex Benth. on the sides or tops of worn sandstone outcrops or ridges and oviposition was observed and pupal exuviae found on this plant. Adults have been taken flying around *Boronia lanuginosa* Endl. (S.J. Johnson *pers. comm.*). The butterflies frequently settle on sandstone near the *Boronia* and, with their wings folded, are difficult to distinguish from the stone.

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References

- COMMON, I.F.B. and WATERHOUSE, D.F. 1981. *Butterflies of Australia*. Pp. xiv + 682. Angus and Robertson, Sydney.
- EDWARDS, E.D. 1980. The early stages of *Adaluma urumelia* Tindale and *Candalides geminus* Edwards and Kerr (Lepidoptera: Lycaenidae). *Australian Entomological Magazine* 7: 17-20.
- SANDS, D.P. 1971. The life history and taxonomic relationships of *Nesolycaena albosericea* (Miskin) (Lepidoptera: Lycaenidae). *Journal of the Australian Entomological Society* 10: 290-292.
- TINDALE, N.B. 1922. On a new genus and species of Australian Lycaeninae. *Transactions and Proceedings of the Royal Society of South Australia* 46: 537-538.
- TITE, G.E. 1963. A revision of the genus *Candalides* and allied genera (Lepidoptera: Lycaenidae). *Bulletin of the British Museum of Natural History (Entomology)* 14: 197-259, pls 1-4.
- WATERHOUSE, G.A. and TURNER, R.E. 1905. Notes on Australian Rhopalocera: Lycaenidae, part iv. *Proceedings of the Linnean Society of New South Wales* 29: 798-804.